The official publication of the Association of Professional Engineers and Geoscientists of the Province of Manitoba

THE KEYSTONE PROFESSIONAL

SUMMER 2012

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APEGM

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Adam Pawlikewich, P.Eng.

Beginning the **Conversation**

In engineering, as with many professions, there is a distinct group of characteristics which define us in our careers. We are often the first group tasked with 'make it work' then the obvious follow up task... 'make it work better.' We have gotten so good at these tasks, that few people outside our profession understand what we do. This has led to a lack of diversity and a shortage of students enrolling for engineering at the university level, and a lack of interest from the public in general on engineering issues.

Part of the lack of visibility stems from simple lack of media coverage or long well-defined histories which belong to other professions such as doctors or lawyers. While there are often no great movie themes which would involve some meticulous engineering work and put stars in the youth of a generation, I think that we as a group can raise awareness of the profession. Once we do, hopefully, we will get better participation in the profession from students and other professionals alike.

I think the obvious place to start is with kids. When they are beginning to learn science and extend concepts in the early years of grade school, a quick note about what you do may help crystalize the understanding. While it may be important for companies to know that their TV came from Sony or that phone came from Apple, when kids ask "Do you know where that comes from?" we should avoid the easy use of simple brand name and let the kids know the steps of how many things come to be in the built and fabricated world.

1. Someone has an idea.
2. An engineer figures out how the idea can actually work and designs it.
3. Someone builds what the engineer designed.
   (A geoscience comparison would be the kids questions "How do we know what's in the ground?)

The simple concept of showing that we represent a key step in a process helps a great deal towards understanding. We can also cautiously mention that without engineering or geoscience, some of the coolest things in the modern world would not exist. I feel that is a point worth having a conversation about.

We should be careful, however, not to proceed in our more unfortunate, often routine engineering fashion, and to say that engineering is the most important field there is and everyone should be engineers. We, as a group, are also responsible to recognize the importance of all professions, trades and other contributing members of society. As with the people who dream big and have many of the ideas, and people who put things together, we are all important members of the process. Just to be understood as a key part of the process of building anything is important to the profession.

> "Perhaps if we begin to have the conversation with the kids and teachers, we will wind up with a broader cross section, not only of engineers, but of other professionals who understand what it is to do engineering. Then the profession will be part of the conversation."

Perhaps if we begin to have the conversation with the kids and teachers, we will wind up with a broader cross section, not only of engineers, but of other professionals who understand what it is to do engineering. Then the profession will be part of the conversation.

One great example of the beginning of this conversation is the Spaghetti Bridge Competition which is held every year to raise awareness of engineering and to raise money for Winnipeg Harvest. This is a great event for the Winnipeg and a great event for engineering and geoscience. There are a number of engineers who provide support and get a real concept out to the students at large in the school system. This is a great way to start.

If you are not sure where to start with the conversation, remember the new APEGM slogan 'My life's work, makes life work better!' Because it does. And hopefully in time, people will understand how.

Have a great summer. If you have any comments or discussion you would like to initiate, please feel free to e-mail me at *president@apegm.mb.ca* .

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Grant Koropatnick, P.Eng., Executive Director & Registrar

What Makes a **Good Engineer?**

I attended the Rotary Career Symposium at the Winnipeg Convention Centre at the beginning of April. What a great event! Did you know that the symposium is the largest student career fair of its kind in Canada? More than 14,000 visitors attend the two-day event and come in contact with 255 exhibitors. APEGM had a nice, double-wide booth in the central aisle of the massive Winnipeg Convention Centre third floor exhibition hall. PENG and PGEO members volunteered to talk to students, teachers, and parents.

One Grade 9 student came to the APEGM booth and my conversation went like this:

GK: So you think you might like to be an engineer?
Student: I dunno.
GK: Do you play hockey?
Student: No.
GK: So you're not gonna have a career in the NHL?
Student (with a grin): No.
GK: What do you like to do?
Student: I like to draw stuff.

> Does this planet need your help with the environment, food supply, energy sources, security of data, betters ways of making stuff, pure water supply?

GK: Do you ever come up with some crazy ideas?
Student (not wanting to admit it): Sometimes.
GK: When you come up with a design, do you ever try to build it?
Student: Sometimes.

It is not easy talking to students. As a father of two adult children, I should know how to relate to kids – I have had 23 years of practice. But, its not easy relating to a diversity of students who do not really know what they want. Look at it from their perspective. It must be intimidating to be dropped in a 200,000 square-foot room with 4,000 people, flashing lights, bags of paper brochures, pens, note pads, candy, and gadgets and then be expected to talk to adults about the future. How scary is that?

So ask yourself, what makes a good engineer? Interest in science and mathematics? High academic achievement? Not really. Here is a random list of possible answers:

- Curiosity about how things work.
- Willingness to explore the unknown.
- Following a process to achieve a goal.
- Working with new technologies and methods.
- Careful treatment of the earth, its resources and people.
- Resisting the urge to go-it-alone and working on a team with others.
- Adequate ability with mathematical equations and scientific principles.
- Service to others.

When you are out in the public around students, here are some questions you might consider asking them about a possible career in engineering. Do you like to solve puzzles and figure out problems? Are you curious about how things work? Do you have ideas for practical products, processes and things that can make daily life better? Does this planet need your help with the environment, food supply, energy sources, security of data, better ways of making stuff, pure water supply? Do you have some crazy ideas for how to accomplish these things? Are you prepared to begin a journey that includes a strong education, supervised

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internship, daily participation with other professionals and the general public? Then you just might make a good engineer or geoscientist.

K-12 Committee

I was at the APEGS annual meeting in May and noticed they have a committee dedicated to outreach in the schools. Their K-12 Committee promotes and encourages science, technology, engineering and mathematics education to students from kindergarten to grade 12, their parents and educators. They work with school divisions, provincial curriculum consultants and science organizations like the Saskatchewan Science Centre. Should APEGM start-up a similar committee? If you are interested in doing more outreach to schools, students and parents – send me an email.

SAGE DAY

Friday, October 19, 2012 is the next Manitoba SAGE Day (special area groups of educators). Teachers from across the province take one whole day to engage in professional development, camaraderie and a forum to share ideas and insights. Special area group conferences and workshops present the best ideas from the brightest minds in teaching. It is a day when educators, administrators, counsellors and supporters get together to engage in topics to make the education system a better place for everyone. APEGM participated last year by speaking at the opening session for the science teachers and by sponsoring their coffee breaks. I am looking for any PENG or PGEO who would like to join me to pitch to the science teachers and guidance counsellors next October. If you're interested in this opportunity – send me an email.

I'm inviting all members to seize the opportunity whenever possible to talk to students about a career in engineering or geoscience. It can be a fascinating journey of discovery helping a young person self-select their career.

One more thing: remember our new slogan: ***'My Life's Work, Makes Life Work Better.'***

Your feedback is invited and always welcomed. If you have any thoughts on anything you read in the KP, please email me at *gkoropatnick@apegm.mb.ca* or message me through Facebook.

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Engineering PHILOSOPHY 101

M.G.(Ron) Britton, P.Eng.

Where does Advocacy fit?

The *Engineering and Geoscientific Professions Act* states three purposes for the existence of APEGM. If you simply consider the verbs contained within Section 3, *The purposes of the association,* our Act authorize us to:

- *"govern and regulate . . .";*
- *"promote and increase, . . . knowledge, skill and competency . . . "* and;
- *"advocate . . .".*

Given the self governing tradition of professions in Canada, the *"govern and regulate . . ."* provision is, and always has been, a prime focus. Many believe it is the Association's only purpose. Basically, if one wishes to practice as an engineer or a geoscientist, one must belong to the Association and the Association must establish and administer the means of delivering on this requirement. While the Act speaks to the broad requirements for governance and regulation, functional details are established by the elected Council and delivered by the Association's Administration. For the most part, this is an internal exercise that only becomes public when a member "steps out of line".

The assumption upon which professional self governance is founded is that those involved in a profession are best able to establish and enforce standards relating to that profession. After all, professionals offer their services based on their specific knowledge, understanding and skills. It follows that a governing Association should establish ways to *"promote and increase, . . . , the knowledge, skill and competency . . . "* of its members. Given that our Code of Ethics requires that each of us assess and maintain our specific areas of competence, it seems reasonable that our Association should assist us as we strive to comply with this responsibility. Again, this is an exercise that is, and should be, an internal concern.

But there remains the "poor country cousin" in the trilogy of *"purposes",* Advocacy. Unfortunately, most people think of advocates as single minded promoters of single purpose causes. Given that the verb "advocate" means, according to my Thesaurus, to *"push for something"* or to *"exhort",* this interpretation is understandable. However, our Act puts a different, but not terribly explicit, spin on the situation because it requires that we *"advocate where the public interest is at risk.".* The question is, how do you differentiate this sort of activity from parading down the street carrying placards?

The fundamental reason for the creation of self governing professional Associations was, and still is, to assure that only those who are qualified are allowed to practice. If the Associations *"govern and regulate . . .";* and *"promote and increase, . . . knowledge, skill and competency . . ."* behind the closed doors of their respective organizations, they are responding to the purpose for their creation. If they are delivering on their commitments, they are protecting the public. The question that still remains is, how do the public know they are being protected?

Consider Doug Ruth's often quoted statement that "we live in plain view", and add to that, Morley Walker's (the editor of the *Winnipeg Free Press's* Saturday supplement BOOKS) comment that "there is a paucity of engineering information available". They are both saying that engineers may be doing their job but no one knows, and we engineers, aren't bothering to tell anyone. Therein, in my humble opinion, lies the need for advocacy by, and for, professions, ours included.

In our case, we are charged with the specific responsibility to *"advocate where the public interest is at risk.".* If the public is unaware of the contributions we are uniquely qualified to make, how do they decide when our services are required? How do they distinguish a bookkeeper from an accountant, a surgeon from a therapist, an engineer from a mechanic or an electrician?

If we are going to deliver on the third responsibility listed in *"The purposes of the association . . .",* we need to make certain that the public know who we are, what we can do, and why we have the privilege of self governance. We, collectively and individually, must advocate on behalf of the profession. If we engineers, as the Legislature has suggested, best understand what we do and what is necessary to remain competent to do it, it follows that we are also best qualified to "tell our story". The public is at risk if they are uninformed. If we advocate properly, we can reduce that risk.

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Thoughts on Design

. . . and another opinion on who/what we are

M.G.(Ron) Britton, P.Eng

As a profession we struggle with the definitions of who we are, what we do (or should do) and how we do it. We often lament that science gets credit for all our "successes" and engineers are blamed for the 'failures.' Typically, our reactions are defensive and our views introspective. Occasionally, however, 'our world' is examined from 'outside', providing a less biased perspective.

Earlier this spring I stumbled on such a book, *Engineering - an endless frontier* (Sunny Y. Auyang, 2004, Harvard University Press). It presents, according to the author *". . . a big picture of engineering."* It is a book about engineering, past and present. The author is a physicist who earned her PhD from MIT and then spent 20 years working in MIT labs. Her observations in that workplace caused her to ponder the relationships between science and technology, both current and historical.

According to Auyang, the question of defining proper 'placement' within the science/technology world is not new. Apparently Socrates, Aristotle, and Plato spent time pondering the difference between *'men of experience'* and *'artists.'* A rough translation of one of Aristotle's observations is *"men of experience know that the thing is so, but do not know what, while artists know the 'why' and the cause of the thing that is done . . ."* Historians seem to agree that the *'men of experience'* he referred to were skilled workers and the *'artists'* were master builders.

The book explores the continuing debate as to when 'real' engineering came into existence. However, if we accept Aristotle's separation of *'men of experience'* and *'artists',* we can at least acknowledge that there were persons on site, at the pyramids, the Roman aqueducts, and the Tower of London, who knew more than just 'how' to do the work. These were massive, complex projects that involved huge numbers of persons and huge volumes of materials. Detailed planning had to be a part of the process. The underlying planning and management must have relied on *'practical artists.'*

As understanding of science and mathematics evolved, the *'practical artists'* pioneered the gradual inclusion of this type of knowledge into the delivery of projects. Applications broadened from construction to include power systems and transportation. If these *'practical artists'* were not engineers, they at least provided the foundations upon which present day engineering is founded.

Eventually apprenticeship programs and then training/education facilities evolved for the persons who applied science and mathematics as tools to solve problems. By the late seventeenth century the title engineer/ingénieur was being widely used to differentiate these individuals from scientists and skilled workmen. Auyang suggested that many began to think of engineering as *". . .the art and science of production that, alongside reproduction, is the most fundamental of human activities."* In other words, engineering was seen as the *'practical art'* that enabled the growth of civilization.

As engineering evolved, the concept of design as a definable activity also emerged. Auyang illustrated the central role of design in engineering by noting that, *"Design is not unique to engineering, but its paramount importance is."*; and, *"The majority of engineers focus on design and development, which many regard as the core of engineering."* Fundamentally, she is saying that engineering has grown out of the traditions of the master builder, that it used/uses science and mathematics as tools, that it has played a foundational role in the development of civilization as we know it, and that design is the fundamental core of the profession. Further, she suggests that design engineering must continue to evolve in support of future development. She notes that *"While engineering science expands knowledge, design creates specific implements and systems . . . "* Growth is dependant on *"specific implements and systems."*

Which takes us back to trying to understand what 'design' is. Wikipedia, one of today's most referenced, if questionably reliable, information sources suggests that *"No generally-accepted definition of 'design' exists, and the term has different connotations in different fields."* At this point we probably need to settle for that old observation that design is what engineers do, and just get on with the job. Adding Engineering - an endless frontier to your late summer reading list might be a credible part of getting on with the job.

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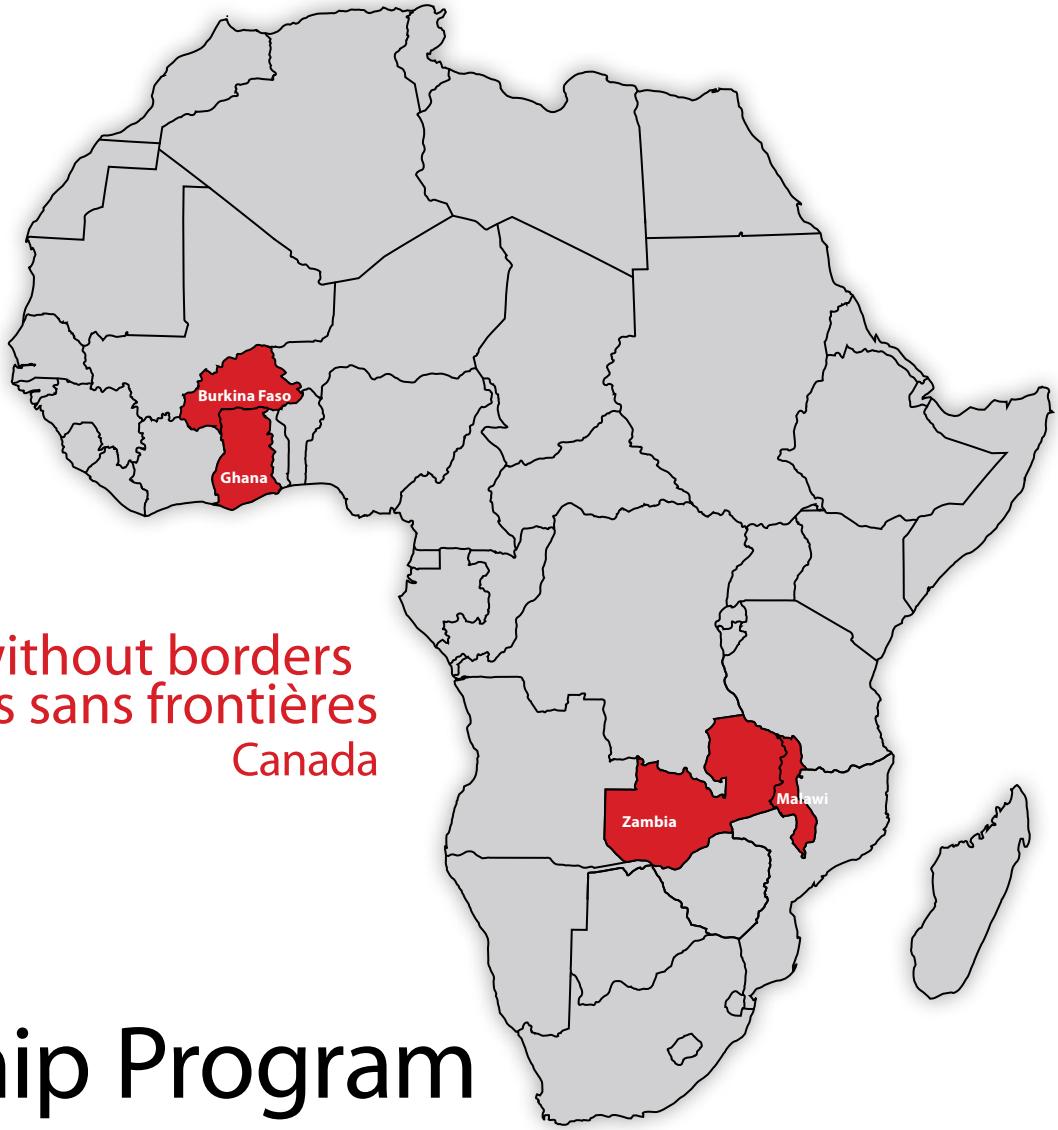

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African Leadership Program

A new EWB program reversed the typical approach of sending Canadian leaders to Africa. For four weeks in January and February of 2012, a group of African leaders came to Canada for an intensive experience called the African Leadership Program. The six participants were selected from EWB's partners in Burkina Faso, Ghana, Zambia, and Malawi (the four African countries where EWB works) based on outstanding contributions in their home countries, strong communication skills and high potential as young leaders.

The program was designed to create better collaboration between Canadians and Africans and ensure that the relationship isn't a one-way street. The chosen delegates gain knowledge and new experiences, which will help them better create lasting, systemic change at home.

The six participants spent part of their time in Canada in formal leadership and management training, along with other topics tailored to their interests, including three days at the Coady International Institute, a world-renowned centre of excellence in community-based development and leadership education.

They also attended the EWB National Conference in Ottawa, 'Systemic Innovations', along with 800 volunteers and staff from Canada. The African leaders met with members of the EWB student and professional chapters across Canada, networked, and made new friends.

Another aspect of the program was work placements with organizations in Ontario and Québec that are relevant to their work in Africa, in sectors related to each person's interest, be it policy, environmental consulting, not-for-profit organizations, water and sanitation, agriculture and agribusiness, or municipal governance and infrastructure. For example, Young Samanyika, Malawi's Principal Environmental Health Officer for Water, Sanitation and Hygiene, spent time with Hatch and the City of Cambridge, learning about water quality management and waste management practices and technologies in Canada.

During the four weeks in Canada the delegates lived with Canadian home stay families, generating two-way cultural exchange. The cultural differences between Canada and the African countries are evident in the blog entries submitted by the African leaders during the program; for example Anthony Selase Sabah is struck that "in trains and buses that passengers only engaged with their mobile phones and iPods, with no interaction with the people who were sitting beside them." He contrasts this not only with his home country of Ghana, but also with the warm welcome he received with his home stay family in the RM of Strathroy, a rural area west on London, Ontario.

Along with the unavoidable new experience of Canada's cold weather, one notable part of the program was when

The 2012 African Leadership Program crew

Anthony Selase Sabah with his home stay family, Brian and Joana Simpson

"During the four weeks in Canada the delegates lived with Canadian home stay families, generating two-way cultural exchange."

delegates joined a Toronto-based homeless mission in handing out sandwiches on the street. Few realized that there were homeless people in Canada at all, and the experience had a profound impact on them. Sylvester Bagulo Bayowo of Ghana writes, "homeless people on the streets of Canada!... did I just say that?" And then, "the cold was so severe I had to take shelter at a restaurant close by and [perform] a 'routine dance move' to shake off the cold! Then I ask myself: How many dance moves [must] these homeless people have to [do] in a day to keep warm?"

In the end, delegates returned home with new ideas, fresh motivation and the tools needed to better drive systemic change that stands in the way of locally led, systemic development. They also gain a better understanding of Canadian culture, and are able to see their homes in a different context.

EWB is excited about the future of this new and growing program, made possible in part by sponsors such as Hatch and Almag Aluminum. The feedback from the delegates themselves, their work placement companies and host families has been tremendous. It is an experience that challenges and inspires individuals in both hemispheres to learn and to think of innovative ways of changing the world and improving their communities.

Local Chapter News

The Third Annual EWB Curling Bonspiel took place on March 2 at the Wildwood Curling Club. A total of 14 teams attended and raised about $2000 for Engineers Without Borders' work. Upcoming events include a Fair Trade Wine Tasting (date to be determined) and the Run to End Poverty on June 17.

As always, consult our webpage at *winnipeg.ewb.ca* for the latest news and events information, or the Engineers Without Borders Winnipeg City Network Facebook page.

New $1-Million NSERC Chair in
Design Engineering Will Make Way for a New Centre for

Professional Practice and Engineering Education

The University of Manitoba is set to launch an exciting new approach to educating engineers of today to meet the ever-changing demands of the technologically driven world.

The Natural Sciences and Engineering Research Council of Canada (NSERC) has awarded a new Chair in Design Engineering to Douglas Ruth, the newly appointed associate dean (design education). Ruth is both a graduate of the engineering faculty at the University of Manitoba, holding a BSc in mechanical engineering, and has also served as dean of the faculty for 11 years.

"Dr. Ruth's strong record of experience will truly take University of Manitoba's unique program to the next level," said Suzanne Fortier, president of the Natural Sciences and Engineering Research Council (NSERC). "His vision to create unique courses that expose students to new developments and to broaden collaboration with industrial partners will create new research and training opportunities for students in this exciting field."

The activities of the Ruth's chair begin April 1, 2012, with $1 million in funding from NSERC over the next five years.

"We will be working toward four main objectives," says Ruth. "Those being: discovery-based learning in all preliminary year engineering science courses, mechanisms to expand design offerings throughout the curriculum, an inter-departmental capstone project, and the establishment of the Centre for Professional Practice and Engineering Education."

This new centre, headed by Ruth, will address the need for engineers to acquire professional expertise in areas such as law and contracts, economics and project management, and communications and marketing.

Dean Jonathan Beddoes is particularly pleased the Centre will focus on helping engineering students understand their future role as a professional in society. "Engineers carry a great deal of social responsibility," says Beddoes. "The Centre for Professional Practice and Engineering Education will ensure our students are taught the skills necessary not only to understand this but to embrace their roles as professionals and leaders."

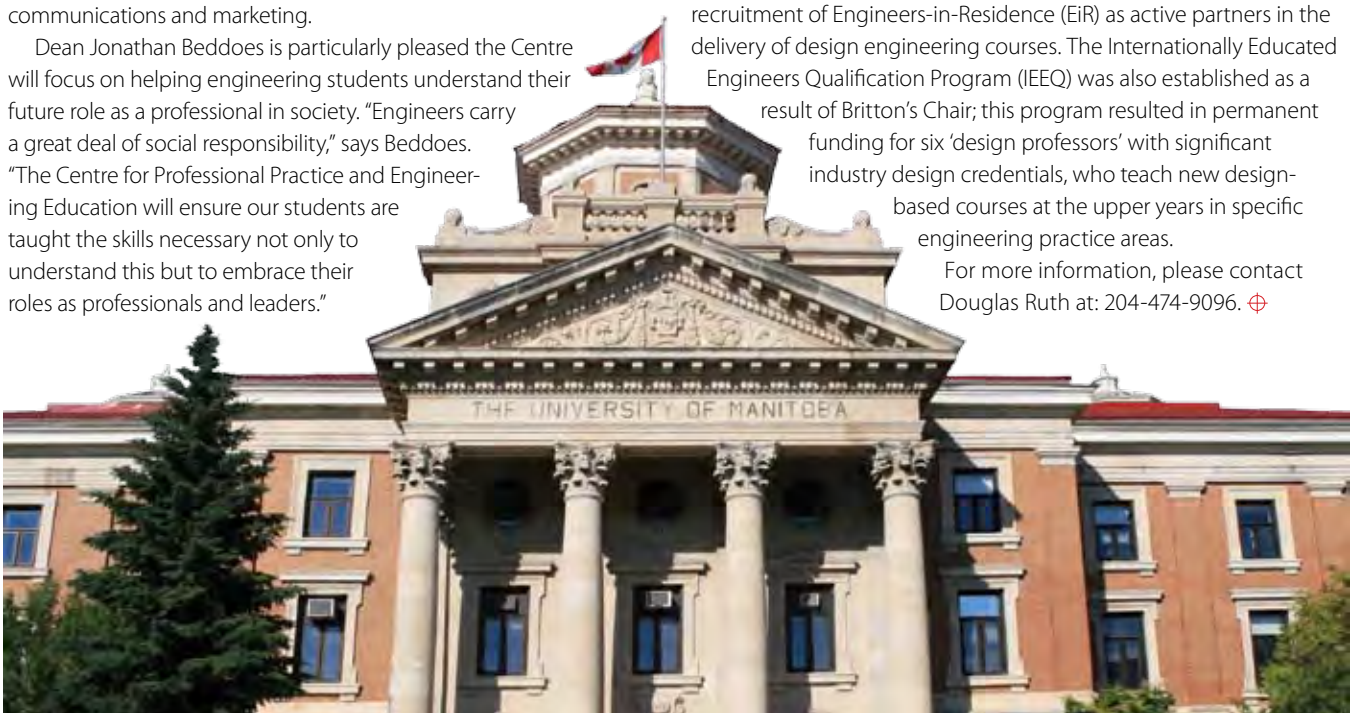
The new Centre will be responsible for all non-departmental professional skills training courses such as Engineering Economics, Law, and Technology and Society. In this role, it will bring consistency and focus to the professional skills training that all engineering students must undertake. The Faculty's Engineer-in-Residence program, the first of its kind in Canada, will continue to grow as part of the Centre and continue to be a strong link between the Faculty of Engineering and the industry of engineering. "Design education is a two way effort," says Mr. Malcolm Symonds, Canada's first Engineer-in-Residence. "The new Centre will help establish and enhance linkages with industry, and through these interactions improve our ability to develop **design ready engineers**."

"I congratulate Doug Ruth and the Faculty of Engineering on receiving this highly competitive chair," said Digvir Jayas, vice-president (research and international) at the University of Manitoba. "Engineering design plays an integral role in every aspect of our civilization from mobile phones to the packaging of the food we eat."

The goal of the NSERC Chairs in Design Engineering program is to expand the level and quality of design engineering education in Canada. Ruth has opted for an innovative approach for the structure of his new chair.

The previous University of Manitoba Chair in Design Engineering (held by Ron Britton from 2001 to 2011) established the Design Group in the Faculty of Engineering, the promotion of engineering design concepts through departmental courses, the restructuring of the delivery of technical communications throughout the faculty, and the recruitment of Engineers-in-Residence (EiR) as active partners in the delivery of design engineering courses. The Internationally Educated Engineers Qualification Program (IEEQ) was also established as a result of Britton's Chair; this program resulted in permanent funding for six 'design professors' with significant industry design credentials, who teach new design-based courses at the upper years in specific engineering practice areas.

For more information, please contact Douglas Ruth at: 204-474-9096.



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El Pueblo Creciente – Growing the Village

Linking the Alternative Village at the University of Manitoba with a community in Honduras

By: Jami Carter, EIT, Luis Midence, Dr. Kris Dick, P.Eng., Department of Biosystems Engineering, University of Manitoba

As the Director of the Alternative Village, Dr. Kris Dick, P.Eng. wants to create opportunities for students that combine their theoretical understanding with hands-on experience. Over this past reading week February 20-24, 2012, Kris along with student Luis Midence (4th year Biosystems Engineering) and Jami Carter (Masters Biosystems Engineering) visited various communities in the regions of Gracias Lempira and Copan Ruinas, Honduras to evaluate whether a program could be established through the Alternative Village at the University of Manitoba to aid in the development of sustainable living in a developing region.

Honduras was chosen as it presented the ideal conditions for the launch of the program. The economy has been struggling to recover since hurricane Mitch struck in 1998 which obliterated over 70% of the crops and transportation infrastructure, as well as leaving nearly 1.5 million people homeless (Encyclopedia of the Nation's 2012). Over 2/3 of the country lives in poverty (Wikipedia 2011), and approximately 24% (Shelter the World 2011) of the population has inadequate housing. Another very good reason Honduras was chosen was that one of the team, Luis Midence, is from Honduras. As a young engineering student he is committed using the skills he learns in Biosystems Engineering and applying them back home. Also, the availability of contacts working on the housing issue from non-government organizations, was the final reason for choosing Honduras, and caused its selection over other countries facing the same economic issues.

The team was partnered with World Vision Honduras that has Program Development Areas (PDA) in various parts of the country. Representatives from two PDAs provided information on the work they had completed in each region, as well as planned work for the future.

The team traveled to three different communities, El Portillo, Consonlaca, and LLanito Verde. Some of the people live in homes constructed of 'bajareke' which is mud packed around vertical and horizontal supports made typically of cannes brava, a local plant similar to bamboo. While these homes may meet the occupant's basic need for shelter, they can degrade rapidly due to exposure, leaving them cracked susceptible to insects and pests such as the chinche. One bite from this bug can cause heart inflammation leading to death. Families living in rural communities have limited access to water, and few can afford

the $5/month installation costs. What water they do receive is not treated and undependable. They have no access to electricity. Family income is generated from men picking coffee while women raise chickens and make tortillas; these they will carry many kilometers into town to sell at little profit. Families may grow beans and corn for their own consumption, however, much of the soil is chalky clay and thus, it is hard to grow anything.

In the Copan Ruinas area the team looked at structures finished with earth plaster and lime-wash. The mud plaster helped seal cracks and holes that developed over time, while the lime-wash made any insects hiding on the building, such as the chinche visible. The two processes combined extended the life of the home and reduced maintenance by protecting it from the elements.

As a result of this field trip the Alternative Village will be partnering with the village of Consonlaca. For the upcoming year a group of engineering students will go in February of 2013 to work with the team constructing a house. As a part of Dr. Dick's course in alternative building systems students will work on various aspects of the design. A total of six to ten students will be selected each year for multi-year project. Initially the focus will be on engineering but in subsequent years the plan is to include agriculture, health, education and business students along with the core group of engineering students. The program will work in one community for a period of time, in that way the impact can be more readily evaluated, and most importantly a relationship can be built with the community. Vision Mondial Honduras along with other in-country and Canadian partners will provide various types of support for this project.

The Alternative Village research team is excited for the launch of a program that seeks not only to generate research at the U of M, but to make a positive impact if not on the world, or the community, at least on a family.

For further information or to provide support for our project, please contact:

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New Framework for Assessment Processes in the Licensing of **Professional Geoscientists in Canada**

By Keith Johnson, MBA and Oliver Bonham, M.Sc., P.Geo.

The Geoscientists Canada Board of Directors recently voted to accept a newly developed consensus document aimed at harmonizing due diligence procedures used across Canada to assess applicants for registration as professional geoscientists. This work represents a pioneering achievement in the field and will be of great benefit in facilitating labour mobility within Canada and internationally.

The new framework, entitled *'Framework for Assessment in the Licensing of Professional Geoscientists in Canada'*, can be found on the Geoscientists Canada website at *www.ccpg.ca*

Speaking about the Framework, the President of Geoscientists Canada, Dr Greg Finn, P.Geo, said, "We are delighted to have been able to facilitate this work and assist the regulatory authorities - our constituent associations - in achieving this. As a 'framework', of course, it is neither prescriptive, nor legally binding. Instead it is a series of broad, visionary and collectively agreed-to principles that the profession and admissions officials, working together will undertake to bring into use over the coming years. Put simply, it is a companion to Geoscientists Canada's *Geoscience Knowledge and Experience Requirements for Professional Registration in Canada,* published in May, 2008. Whereas the latter outlines expectations on admissions requirements to become a professional geoscientist in Canada, the Framework describes the processes used to determine that admissions requirements have been satisfied."

Dr Finn went on to say, "Having this Framework in place will help ensure high standards of admissions and greater protection of the public, while at the same time greatly facilitate both inter-provincial and international mobility for all geoscientists."

Much of the impetus for this work by Geoscientists Canada, (which was funded in part by Human Resources and Skills Development Canada's Foreign Credential Recognition Program), arose in response to (and has followed in parallel with) changing trends in the regulation of professions and inter-provincial labour mobility that have occurred in Canada in recent years – namely:

Four provinces - Ontario, Quebec, Manitoba, and Nova Scotia – enacting fair access to the professions legislation. While the specifics and purpose of these statutes vary regionally, generally they seek to ensure assessments of professional credentials are done transparently, fairly, consistently and expeditiously by qualified personnel;

The federal government in 2007 establishing the Foreign Credential Recognition Office (FCRO) at Citizenship and Immigration Canada. The FCRO, since renamed the Foreign Credential Referral Office, has evolved into a resource facility providing information to prospective immigrants on foreign credential recognition and labour markets;

Resulting from a joint federal, provincial, territorial initiative, the FCRO publishing in 2009 *'A pan-Canadian Framework for the Assessment of Foreign Qualifications.'* And work is underway to ensure those occupations targeted in this framework are compliant with its requirements in the near term;

In April 2009, the Council of the Federation (Canada's premiers) introducing significant revisions to Canada's Agreement on Internal Trade (AIT) - Chapter 7/ Labour Mobility, whereby a professional who has been licensed to practice in one province or territory in Canada can apply to become re-licensed in another, without the requirement of reassessment, retraining or retesting and;

Most recently, in April 2012, the opening of a new national website by the Forum of Labour Ministers, through its Labour Mobility Coordinating Group, specifically to establish a centralized body of information on AIT - Chapter 7. This website provides information to regulatory authorities and regulated workers on issues related to labour mobility, including information on additional certification requirements, answers to Frequently Asked Questions and a detailed list of current exceptions to labour mobility across Canada. It also houses contact information for jurisdictional labour mobility coordinators and contains links to important initiatives and resources related to labour mobility in Canada.

Parallel developments internationally include: the European Union's Bologna Process – on higher education in Europe; the Lisbon Convention on recognition of academic credentials; and specific to geoscience - the European Federation of Geologists' Euro-Ages (European Accredited Geological Study Programmes) project.

Most important in this context are the changes to AIT - Chapter 7, which in effect amount to a legislated mutual recognition agreement between all regulatory authorities for each profession in Canada. Transfer applicants between provinces now have labour mobility and, subject to certain conditions only, must be re-registered without reassessment and without delay. Because now only one jurisdiction is undertaking an individual's complete assessment, the criteria and methodology used by any one jurisdiction, directly affects the competence of practitioners working in all jurisdictions. Greater harmonization of assessment practices and policies for both domestically-trained and internationally-trained applicants is therefore vital in ensuring the integrity of the entire admissions system nationally.

The confluence of these regulatory trends and forces has necessitated the geoscience profession taking a shared, pan-Canadian approach to due diligence in assessing the competency of all individuals seeking licensure as professionals.

The *Framework for Assessment in the Licensing of Professional Geoscientists in Canada* is directly targeted to address these challenges. It consists of a series of broad, visionary practices and protocols which Canadian geoscience admission officials collectively agree should be used, in the context of the following key topics:

- Document authentication and assessment
- Academic training assessment
- Practice experience assessment
- Timeliness and communications
- Reconsiderations and appeals
- Quality assurance

Core research for the Framework project was a study conducted in 2010 involving a 134-question survey, completed by representatives from all ten regulatory authorities that make up the membership of Geoscientists Canada detailing their current geoscientist assessment and admission practices. This was followed by debate among the regulatory authorities, together with consultations within the geoscience community. Much of the construction of the resulting Framework is based on best practices in the field of credential and competency assessment already in use across Canada in geoscience, in engineering and in other progressive regulated professions. It also takes into consideration due diligence approaches in use in admissions assessment at professional geoscience organizations outside Canada.

Taken together over time, Geoscientists Canada's *Geoscience Knowledge and Experience Requirements for Professional Registration in Canada,* and the new *Framework for Assessment in the Licensing of Professional Geoscientists in Canada* will ensure similar outcome decisions across the country, when applicants to the profession are assessed and ultimately admitted. Together they will ensure geoscientist competencies required for licensure can be demonstrated in a consistent and fair manner across the country, while at the same time providing improved due diligence, transparency and efficiency of process. This in turn will lead to greater overall protection of the public, greater inter-provincial mobility of practitioners, and improved admissions systems for both domestically-trained and internationally trained-geoscientists seeking to enter the profession anywhere in Canada.

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Immigration Recruitment of Foreign Trained Engineers and Geoscientists

By R. Reis Pagtakhan

Because of labour shortages, companies are increasingly looking to foreign professionals to fill temporary positions. Even when companies are recruiting for permanent positions, lengthy immigration processing times often lead companies to seek temporary entry for employees while permanent moves are considered.

How can foreign professionals work in Canada temporarily?
In order for foreign professionals to work in Canada temporarily, they must obtain work permits – Canadian government documents that allow foreigners to work in Canada on a time limited basis. While all foreigners need work permits to work in Canada, the process to obtain work permits differs depending on the nationality and residence of the foreign national.

What is the fastest way to recruit foreign professionals?
The fastest way to recruit foreign professionals is by recruiting professionals covered by free trade agreements Canada has with the U.S., Mexico, Chile, Peru or Columbia. Professionals covered by these agreements have expedited entry to Canada if they can show that they:

- are citizens of these countries (or for Peru and Columbia, permanent residents of Peru or Columbia),
- meet the free trade definition of engineer, geologist, geophysicist, or geochemist;
- have prearranged employment with a Canadian employer,
- are providing a professional level of service in the field of their profession, and
- comply with all other immigration requirements for temporary entry.

What is the free trade definition of engineer, geologist, geophysicist or geochemist?
Under agreements with the U.S., Mexico and Chile, engineers must hold either:

- a bachelor's degree (or Mexican or Chilean equivalent); or
- a state or provincial license to practice engineering.

Geologists, geophysicists or geochemists must hold a bachelor's degree or Mexican or Chilean equivalent.

If relying on degrees, degrees must clearly be from a 'related educational program.' For instance, a number of engineering programs award a Bachelor of Science degree. If the diploma does not indicate the degree is in engineering, it may be necessary to also present a copy of the academic transcript to show a connection between the courses and the profession. If a diploma and transcript are still not clear, copies of course syllabuses may be necessary.

Under free trade agreements with Columbia and Peru, citizens and permanent residents of these countries must have at least a four-year degree in the field of specialty to qualify as an engineer, geologist, geophysicist or geochemist.

What is prearranged employment?
Prearranged employment includes employer-employee and independent contractor relationships. Prearranged employment is designed to prevent professionals from entering Canada to 'hang out a shingle.'

What is professional level of service?
Professionals must provide professional services in their field. For instance, an engineer who is also an artist, cannot enter as an engineer if intending to work as an artist.

What other immigration requirements must be met?
Professionals must not have violated any relevant laws or have medical conditions that would disqualify them from entering Canada.

What if I want to recruit a professional from a country without a free trade agreement with Canada?
In these cases, companies usually have to go through a longer and complicated process, which includes trying to recruit for the position domestically. Depending on the country the professional will be coming from, this could add months to the process.

In Manitoba, the process usually starts with an employer registering for permission to hire a foreign worker with Employment Standards. Next, employers must advertise the position and attempt to find Canadians or Canadian permanent residents to fill the vacancy. In doing so, the type of ads that must be run as well as the frequency and contents of the ads is specified by Human

Resources and Skills Development Canada ("HRSDC").

Once the prescribed advertising runs its course, employers have to apply for a Labour Market Opinion from HRSDC to prove, amongst other things, their domestic recruitment. This process can take weeks or months depending on the situation. Only after a positive Labour Market Opinion is issued can the foreign worker apply for a work permit to work in Canada.

Is there anything else an employer must do qualify to hire a foreign professional?

Regardless of the method by which a foreign professional is hired, employers must pass certain tests to qualify. Employers must not be on the 'employer ineligibility list' and must meet both the immigration 'genuineness' and 'substantially the same' tests.

What is the employer ineligibility list?

This list is a publically available list of employers prohibited from hiring foreign workers because of past violations of immigration laws. If an employer is on this list, that employer will not be allowed to hire a foreign professional.

What is the 'genuineness' test?

Under this test, employers must establish the following to be able to hire a foreign worker:

- They are 'actively engaged' in the business;
- Their job offer is consistent with their reasonable employment needs;
- They are reasonably able to fulfil the terms of the job offer; and
- They, and any authorized recruiter that has acted on their behalf, can show past compliance with laws that regulate employment or the recruitment of foreign workers in the province or territory when the foreign professional will work.

What is the 'substantially the same' test?

Under this test, employers must establish that all foreign workers employed in the last two years were given the same working conditions, wages and benefits that were originally represented to Citizenship and Immigration Canada.

In another words, if an employer violated the terms of their employment contract with any foreign worker (including non-professionals) any time in the two years prior to a professional applying for a work permit, the employer could be prohibited from hiring future foreign professionals.

This Article is prepared for general information purposes only and should not be viewed as legal advice or opinion. Reis is a partner with Aikins Law and practices in the areas of immigration law.

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Tomorrow's Engineers Use Their Noodles;

APEGM uses pasta to build bridges and to help bridge the hunger gap

By Tristen Gitzel, EIT

Grade 1-12 students demonstrated their engineering creativity Saturday, March 10, 2012 at Kildonan Place Shopping Center. Each student carefully constructed a bridge from spaghetti and white glue for the event, where volunteers from APEGM loaded the bridge until its inevitable collapse.

This competition is a vehicle for celebrating and reminding Canadians of the importance of engineering to their lives and as a career choice. The Association of Professional Engineers and Geoscientist of Manitoba (APEGM) engaged and motivated the students this year; in order to surpass their goal of 10,000 pounds of pasta being donated to Winnipeg Harvest. For every pound of weight the bridge held before fracture, a pound of pasta was donated to Winnipeg harvest.

"In 2011, the cumulative weight supported by all bridges was 4253kg, or 9377 lbs. This year, we increased our cumulative weight to 5313kg, or 11689 lbs, our all time high. The students of Manitoba worked hard and built strong bridges which showed by surpassing our target goal of 10,000 pounds which had never been done before." said Angela Moore, APEGM Events & Communications Coordinator.

In order to get students (and their teachers) excited to crush their masterpieces publicly, APEGM provided pizza parties to classes that brought ten students or more. More importantly, cash prizes were given out to the bridge that held the most weight in each grade (1 - 12); and, grand prizes for Grades 1-6 and 7-12. Due to this year's success and interest, next year's prizes will be even greater, as well as a new "Adult bridge" category. Start planning your designs now APEGM members.

"It's great to see students, teachers and engineers come together to build strong bridges in support of Winnipeg Harvest. With a bit of spaghetti, glue and engineering ingenuity this year's contest entries held up more than 11,000 lbs! That means Winnipeg Harvest receives a nice donation of 11,689 lbs of pasta from the Engineers & Geoscientists of Manitoba" said Grant

"There are more bridges to build as we try to reduce by half, the number of people using food banks by 2020."

Koropatnick, P.Eng., APEGM Executive Director & Registrar.

APEGM's donation was matched by food donations from Winnipeg Harvest partners, Canada Safeway and Peak of the Market. "Utilizing pasta to construct bridges is a great way to inspire tomorrow's engineers. By including such a generous donation to Winnipeg Harvest, it helps illustrate that building bridges to reduce the number of people relying on food banks is important for any professional moving forward", says David Northcott, Executive Director at Winnipeg Harvest.

"There are more bridges to build as we try to reduce by half, the number of people using food banks by 2020" says Northcott. Each month, over 55,000 Manitobans use food banks. More than half of the clients are children.

APEGM and the Public Awareness Committee (PAC) would like to thank all the volunteers that made this event possible, without their support events like these would be impossible. The Spaghetti Bridge competition was part of a series of events on Saturday & Sunday, March 10 - 11, 2012 to celebrate Provincial Engineering and Geoscience Week (PEGW). The celebration is part of a National Engineering Month occurring across Canada throughout March 2012. PEGW is held for the public with the goal of improving awareness of the engineering and geoscience professions and their numerous contributions to improving the lives of Manitobans. PEGW also promotes careers in engineering and the geosciences to young people of all ages.

Do you Want to Know a Secret?

By Danny Mann, Ph.D., P.Eng., Professor & Head, Biosystems Engineering

The Biosystems Engineering Program

at the University of Manitoba is no longer new, but the term 'Biosystems Engineering' still seems to be a mystery to some in the engineering community in Manitoba. It is not our intent to keep this program a secret, therefore, the intent of this article is to 'let the cat out of the bag.'

The Biosystems Engineering program emphasizes the application of engineering principles to biologically-based systems (i.e., systems that include plants, animals, microorganisms, or humans). The program has been designed to give students knowledge of the fundamental principles of engineering and to introduce biological concepts to enable these engineers to successfully interact with relevant professionals when solving engineering problems involving biological systems. The Department of Biosystems Enginering at the University of Manitoba offers five specializations (agricultural, biomedical, bioprocessing, environmental, and sustainable building systems) that can be taken within the Biosystems Engineering program. We (speaking on behalf of the professors in the Department of Biosystems Engineering) strongly believe that a basic understanding of biological concepts is critical to each one of these five areas of specialization. We do not offer a biology degree or a biosystems degree – rather we offer a Biosystems *Engineering* degree. The program is fully accredited by the Canadian Engineering Accreditation Board.

Specializations in the Biosystems Engineering Undergraduate Program

- **Agricultural Specialization** Challenges remain in the production of food for a world of ever-increasing population. There is a role to be played by engineers to increase the efficiency by which food is produced. Examples include developments in the design of machinery for food production and the design of controlled environments for both plant and animal production.
- **Biomedical Specialization** The biomedical specialization provides engineers with knowledge of human anatomy and physiology to enhance the understanding of the role to be played by engineers in specific areas within biomedical engineering such as rehabilitation engineering, clinical engineering, medical imaging, and orthopaedics.
- **Bioprocessing Specialization** The bioprocessing specialization is intended for engineers interested in areas such as production of plant-based pharmaceuticals or developing viable energy sources using either biological processes and/or biological materials (such as biomass).
- **Environmental Specialization** There are numerous environmental issues faced by society. The environmental specialization provides engineers with the knowledge to predict environmental impacts due to human developments and to solve problems associated with the environment (soil contamination, pollution of rivers and lakes, air pollution, wastewater treatment).
- **Sustainable Building Systems Specialization** There is a growing desire to reduce the ecological footprint associated with residential and commercial buildings. Engineers will gain knowledge in sustainable building practices and the use of renewable energy sources in building systems.

An innovative aspect of the Biosystems Engineering program is the capstone experience, which has been termed the "Design Trilogy." The capstone course in any engineering program is intended to help bridge the gap between the university classroom and the work environment of the practicing engineer. Capstone courses may be organized in many ways, however, a common element is the opportunity to work on a substantial design project. The Design Trilogy is unique and innovative in three ways. First, the Design Trilogy provides a capstone experience that is spread over three courses. Students get introduced to the capstone experience in second year when they first enter the program and then have a year-long opportunity during the final year of the program. The second innovation is that the teaching of technical communications has been fully integrated into the Design Trilogy rather than students taking the stand-alone technical communications course. This approach enables the opportunity to practice what has

been taught during preparation of a report to be submitted to an industry client. The third innovation within the Design Trilogy is that students have the opportunity to build a prototype of what they have designed. The typical university capstone experience ends with a conceptual solution that is described in a written report. In such a model, the engineering student never gets to experience the process of taking the design from the office to the shop. For the past four years, we have provided this experience to Biosystems Engineering students. The final third of the Design Trilogy is dedicated to fabrication in the shop. Although there is assistance available from the shop technicians, the students are responsible for fabricating their prototype. This has proven to be an exceptional learning experience for the students. They gain an appreciation for basic shop skills. They have learned that their designs on paper often had flaws that became evident when fabrication was attempted. Finally, they gain an appreciation for the importance of details for assembly of the prototype. The Design Trilogy plays a key role in helping us to prepare engineering graduates prepared for the challenges of the real world. For many years, we have heard from industry that engineers need good "soft skills" to complement technical competence. We have taken these concerns to heart and created a learning experience that enables the development of such skills.

There, the secret is out! The Biosystems Engineering program graduates engineers that are well-prepared to tackle a broad range of engineering problems. It would be great if you could help us to further spread this news with your colleagues or with your human resources department. The next time you have opportunity to speak with a graduate of the Biosystems Engineering program, be sure to ask him or her (did I mention that we have approximately 50% women in the program) about their most memorable experience as an engineering student.

We see ourselves as a growing Department with an exciting future. However, we know that our future success depends upon our ability to be relevant to both industry and our society. We welcome partnership with the organizations that you represent. Partnership may take the form of providing a co-op placement for an undergraduate student, suggesting a student design project for our Design Trilogy, providing an internship for a graduate student, research collaboration with one of our professors, interacting with students in the lab as an engineer-in-residence, or participation in an advisory group for the Department of Biosystems Engineering. As you see, we are receptive to creative ways to partner with your organization. If you would like more information about the Biosystems Engineering program at the University of Manitoba, do not hesitate to contact me by phone at 474-7149 or by e-mail at *Danny_Mann@umanitoba.ca*.

Research Labs in the Department of Biosystems Engineering

Alternative Village: An outdoor laboratory dedicated to alternative energy technologies and building envelope systems. The centrepiece of the Alternative Village is the Straw-Bale Building, with numerous other small, innovative structures.

Agricultural Ergonomics Lab: Has been developed to research the ergonomic and safety issues associated with agricultural machines.

Biofuels, Biotechnology & Fermentation Lab: Dedicated to the biological production of biofuels and bioproducts (ethanol, hydrogen, bioplastics) using various sources of biomass as feedstock.

Bioprocessing Engineering Lab: Processing, drying, and evaluating food using various innovative systems.

Computational Optimization and Geometric Modeling Lab: Use of computational methods for biomedical/biological imaging, pattern recognition, spectroscopy, and hyperspectral imaging.

Grain Storage Research Lab: A 1400 m^2 state-of-the-art laboratory dedicated to research on grain storage and handling.

Imaging and Food Quality Assessment Lab: Focuses on providing safe and healthy food to humans and livestock through improved imaging.

Odour Research Lab: Quantification and analysis of odour samples, and evaluation of various odour-reduction technologies.

Soil Dynamics & Machinery Lab: Machine-material interactions associated with soil engaging tools and processing of agricultural fibres.

Soil & Water Engineering Lab: Dedicated to the areas of irrigation, drainage, remediation of contaminated soils and groundwater, and instrumentation for soil and water monitoring.

Waste Management Lab: Dedicated to treatment of livestock waste, municipal wastewater, and industrial wastewater. A pilot-scale anaerobic digestion facility is located at the Glenlea Research Station.

Amanda LaCoste, P.Eng.
Association of Consulting Engineering Companies – Manitoba, Young Professionals Committee

Sustainable Building Design
A Junior Engineer's Perspective

Engineers have a large say in the processes and technologies used to design buildings. Sustainable building design is the process of constructing a building that has minimal impacts to the environment, and one of the most practical ways to construct a sustainable building is to follow the standards laid out by LEED™. According to the Canada Green Building Council, the Leadership in Energy and Environmental Design (LEED) Green Building Rating System® encourages and accelerates global adoption of sustainable green building and development practices through the creation and implementation of universally understood and accepted tools and performance criteria.

The achievement of LEED™ certification for a building is growing in its popularity. In many cases, the government is willing to fund public building construction projects to help them achieve a LEED™ Silver status or higher. This allows owners to obtain a sustainably designed structure with minimal additional costs for the added features.

Sustainable features can be integrated into building location, envelope, energy use, water use, construction process, material selections and more, and the best way to achieve a sustainable building is to start in the design process with the engineers and architects.

Most of the credits and prerequisites of LEED™ fall under the responsibility of engineers. Throughout this article, the roles civil, mechanical and electrical engineers can play in the LEED™ process will be briefly outlined and discussed.

Civil Design Aspects

Civil Engineers play an important role in building design that meets the requirements for sustainable site credits and prerequisites.

An essential feature of sustainable building construction is site selection and development with as little environmental impact as possible. This can involve selecting a site near local amenities, and/or selecting and rehabilitating a site that has been previously damaged by environmental contamination. Site rehabilitation enables the design team to avoid damaging undeveloped sites that could be used for the project and thereby preserving the environment.

Civil engineers can also protect the environment surrounding the site during construction. Ground disruptions during building construction have the potential to create many harmful effects on the surrounding environment. Some effects cannot be controlled; for example, the weather, rain and snow can easily move soil, contaminating grounds adjacent to construction sites. Civil engineers have the opportunity to recommend methods to minimize this contamination, such as controlling the amount of soil that leaves the site by designing runoff areas for storm water to flow away from the other sites, or planting native plants on the property.

Electrical Design Aspects

Electrical engineers can also contribute to the design requirements of LEED™ accreditation under the sections sustainable sites,

click HERE to return to table of contents

energy and atmosphere, and indoor environmental quality, and as well indirectly influence the mechanical engineering design aspects.

Many urbanites do not see stars as a result of light pollution. Electrical engineers can select exterior lighting with shading devices to focus light downwards, and design the interior lighting of the building to be reduced between 11pm and 5am to help bring back our night sky.

One of the most important ways electrical engineers can contribute to a sustainable building is to utilize renewable energy sources such as solar panels. Renewable energy sources reduce the impact a building will have on fossil fuel use. This is ideal as fossil fuel use is on the decline, and may at one point in the near future become completely eliminated.

Another way an electrical engineer can contribute to sustainable design is to control the lighting and airflow in spaces with occupancy sensors. Sensors help reduce energy use throughout a building by ensuring that lights and fans are turned off in unoccupied areas. Some sensors have the ability to perform daylight harvesting by adjust the lighting levels based on the amount of daylight entering exterior windows.

Mechanical Design Aspects

Mechanical engineers have the greatest opportunity of all the engineering disciplines to contribute to sustainable building design by focusing on design aspects affecting water efficiency, energy and atmosphere, and indoor environmental quality.

One simple way for mechanical engineers to contribute to sustainable building design is by selecting low flow plumbing fixtures such as dual-flush toilets, waterless urinals, and low flow aerator installations on faucets. The use of water conservation and reuse design aspects such as the BRAC water system (which uses waste water from showers, sinks, and lavatories to flush toilets) can help reduce water use in a building. There are also technologies that will capture rainwater for non-potable usage such as toilet flushes. These systems not only save on annual utility costs, but also lessen the burden on municipal water supply and wastewater systems.

There are new devices that use much less energy than traditionally expected. These devices can recover the energy rejected from building systems, or ensure that the systems are only using the capacities that it requires. Examples are heat and energy recovery ventilators, economizers, high efficiency boilers, and variable frequency drives that can be incorporated on to fans and pumps. The initial cost of incorporating these devices is usually more expensive than designing the system without them; however, the payback through savings in utility costs is significant enough to justify their installation.

Chlorofluorocarbons (CFCs) and hydro chlorofluorocarbons (HCFCs) considerably contribute to the depletion of our ozone layer. Mechanical engineers can select equipment utilizing natural refrigerants or hydro fluorocarbons (HFCs) such as R134a, R410a and propane.

The indoor environment is an important factor in sustainable building design. Mechanical engineers can design building systems that improve indoor air quality, increase the volume of outdoor air added to a building, provide additional ventilation above the minimum requirements laid out by ASHRAE 62.1, and provide individual thermal controls. Addressing these features in a building is essential to providing healthy spaces and productive environments for people to live and work in.

Final Thoughts

The examples listed above are just a sample of what civil, electrical, and mechanical engineers can influence in features for a sustainable building; however, all engineering disciplines should become familiar with the sustainable aspect of design as the demand for sustainable design is increasing, and will play a major role in construction projects in the future.

For more detail on designing a sustainable building, refer to the *LEED Canada Reference Guide for Green Building Design and Construction 2009.*

The Wither Group Inc.
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t/a Big Bertha Boring

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President
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MEMBER UPDATE

February, March, April 2012

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Annual General Meeting

The 2012 Annual General Meeting of the Association of Professional Engineers and Geoscientists of the Province of Manitoba will be held on Friday, October 26, 2012 at the Fort Garry Hotel, 222 Broadway, Winnipeg, MB.

Nominations for Election to the APEGM Council

The Nominating Committee of APEGM requests recommendations from members and members-in-training for nominees who they consider to be qualified to participate in the governance of the Association and who are willing to so serve the engineering and geoscience professions in Manitoba. There will be five professional engineer positions and one professional geoscientist position to be filled as of October 2012.

The Committee will consider recommendations received by the secretary up to the close of business on Friday, September 14, 2012. In the event insufficient recommendations are received, the Committee may exercise its prerogative to put forward a slate of candidates for election that is equal to the number of positions to be filled. Persons submitting a recommendation are required to obtain the consent of the professional member being recommended and to provide a curriculum vitae or biographical sketch.

Members can also be nominated directly and be on the ballot for the 2012 election by the completion of the prescribed nomination form. The form can be obtained from the Association office or from the website at *www.apegm.mb.ca/NominationsForCouncil.html*. The consent of the nominee must be obtained.

Members of Council whose term of office continues for another year are:

Christopher J. Beaumont Smith, P.Geo.; Luis E. Escobar, P.Eng.; Marcia R. Friesen, P.Eng.; Dawn J. Nedohin-Macek, P.Eng. (President-Elect); James W. Nicholson, P.Eng.; Adam R.D. Pawlikewich, P.Eng. (will continue as Past-President)

Members of Council whose term of office expires at the 2012 Annual General Business Meeting are:

M. Rajib Ahsan, P.Eng.; William (Bill) C. Girling, P.Eng.; Rick M. Lemoine, P.Geo.; Roger G. Rempel, P.Eng.; Donald N. Spangelo, P.Eng.

By-Law Changes

By-Law 17.1 prescribes that any proposal to introduce new By-laws, or to repeal or amend existing By-Laws, must, unless initiated by the Council, be signed by not fewer than six members. Proposals must be given to the secretary at least 42 days before the meeting. In this case, the date for the receipt of a proposal is Friday, September 14, 2012.

Resolutions

By-law 5.1.4 prescribes that resolutions put forward at an Annual General Meeting must be in writing, signed by the mover and seconder, and received by the Secretary no less than 48 hours prior to the commencement of the meeting. Either the mover or the seconder must be present in person or by distance conferencing at the meeting for the resolution to be considered.

Grant Koropatnick, P.Eng., Secretary

iPad Winner

IPAD Winner for the Salary Survey, Claudio Zubin, EIT, employed with Boeing

Did you know ...? *The Builders' Liens Act*

By Wells Peever, QC

Did you know that there is no statutory holdback under the Manitoba *Builders' Liens Act* on payments of professional fees and other charges owed to engineers and architects?

Generally, amounts paid in connection with construction contracts are subject to a statutory holdback under *The Builders' Liens Act* of 7.5% of each payment made for all work done, all services provided and all materials supplied. The holdback is paid out to the person who did the work or supplied the materials upon substantial completion of the contract. However, no statutory holdback is levied against professional fees and other charges by engineers and architects. The reason is that when the current builders' liens legislation was first proposed in 1981, consulting engineers and architects were concerned that the holdback would have a serious impact on their cash flows. The reason, of course, is that the work of engineers and architects often commences at the design phase and continues through to final inspection of the completed project. For large projects, the amounts held back from engineers and architects may have been held for years.

In 1981, when the legislation was proposed, the APEM (as it was then known), on behalf of the profession, approached the government and requested that engineers be exempted from the holdback provisions. The architects made a similar request. The government was agreeable to the request but the quid pro quo was that engineers and architects would have no rights of lien under the Act.

The result is that engineers and architects are not subject to the holdback provisions of *The Builders' Liens Act* and have no lien rights under the Act. While engineers and architects cash flows remain intact, in the event of non-payment, engineers and architects must enforce their claims through the courts, rather than relying upon rights of lien under *The Builders' Liens Act.*

The Continuing Competency Committee

The Continuing Competency Committee was formed by Council following the bylaw changes that implemented our new Continuing Professional Development Program. One of the functions of this new committee is to provide interpretations for members regarding our new program. When these decisions are made, they will be posted to the APEGM website. Please refer to: *http://www.apegm.mb.ca/CCCInterpretations.html*. If you have any questions that require interpretation, contact the Professional Standards Officer: Michael Gregoire, P. Eng.

From the Manitoba Iron Ring Administrator

Camp 8 of The Corporation of the Seven Wardens Inc. *(http://www.ironring.ca/)* which administers The Ritual of the Calling of an Engineer, or Iron Ring Ceremony, in Manitoba is accepting expressions of interest in serving the Camp as an Alternate Warden.

Alternate Wardens must have been previously obligated at a ceremony conducted by one of the Camps listed on the website of The Corporation of the Seven Wardens Inc. Additionally, she or he is expected to contribute to the preparations for and execution of the two ceremonies that are held each year. Typically that entails two organizational meetings in addition to the ceremonies.

Expressions of interest that include a brief resume are to be forwarded to Dave Ennis, P.Eng, Secretary-Treasurer, Camp 8, before August 31, 2012, at:

ns2@mts.net

or by Canada Post to: 58 Crowson Bay, Winnipeg MB R3T 0J8

A listing of current Wardens and Alternates and additional information can be accessed at *http://www.apegm.mb.ca/IronRing.html*. Responses to expressions of interest will be made before October 31, 2012.

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Authentication Questions

I received an email from one of our members who had a couple of questions about authenticating (stamping and signing) drawings. The questions were:

1. Once a drawing has been stamped and signed, how long is the stamp valid for?
2. What is the protocol for scanning our stamps to be used with AutoCAD?

There are three ways to interpret the first question and I will provide an answer for all three interpretations. The immediate answer that comes to mind is that the authentication of a document is valid forever. When a member authenticates a document, it is to be permanent, save for errors or requested changes, at which time a revision is made. Even in these scenarios, though, the original document continues to exist.

I imagine that most members are aware of this concept, though, so I will address the two other, more likely, interpretations to the first question:

a. For how long is a member responsible for being the steward of an authenticated document? This really boils down to a legal question. As our Guideline on Authentication states, 'Documents should be retained for as long as any liability for the work exists.' In Manitoba, this can be a very long time. The Manitoba Limitation of Actions Act *http://web2.gov.mb.ca/laws/statutes/ccsm/l150e.php* prescribes a 30-year ultimate limit to all actions but this currently doesn't apply to economic loss from dangerous buildings. The Report for Consultation on the Limitations Act *http://www.manitobalawreform.ca/pubs/pdf/additional/consultation_limitations_actions_act.pdf* provides a detailed analysis of the current Limitations Act and makes some recommendations. At present though, as it describes in section J 2 of the report, effectively a building owner can take action against a designer for a faulty design at any time. So, at present, all consultants are recommended to keep the original of their authenticated documents ad infinitum.

The good news is that there is an effort to have this changed. The Report for Consultation made several recommendations for changes to the Limitations Act in Manitoba. Similar changes have already been implemented in other provinces and APEGM is part of a group trying to facilitate the changes in Manitoba.

b. The third interpretation of the first question is, for how long is the design, described in an authenticated document, valid for the purposes of implementation? The answer lies mainly in the state of the standard of practice and the codes that were applied in the design process. If the standard of practice for that type of design evolves or if the codes get revised/replaced/cancelled, then the design may no longer be valid for the purposes of construction, process changes, specification, etc. The member who authenticated the document is really the only person who can determine whether or not the underlying standard of practice or applied codes have changed and is therefore the only person who can properly answer that question on a document by document basis.

> "The allowed practice at this time is for members to print a document with the image of the stamp and the date already in place, and then sign the printed document."

As for the second question regarding scanning the stamp, it is allowed. Members may either scan an image of the stamp or recreate the image of the stamp for the purposes of including that image with the document when it gets printed (and avoiding the need to manually stamp them after they are printed). APEGM does not allow members to scan the image of a signed stamp for the purposes of authenticating. So, the allowed practice at this time is for members to print a document with the image of the stamp and the date already in place, and then sign the printed document. If an electronic, authenticated document is required, we now have the option of using an electronic seal *http://www.apegm.mb.ca/ElectronicSeal.html*.

If anyone has a question about practice standards, do not hesitate to contact me. I will provide you with an answer or will do my best to find someone who can provide one.

The Keystone Professional wishes to thank the following companies and organizations for their advertising support. Please think of them when you require a product or service. We have tried to make it easier for you to contact these suppliers by including their telephone numbers and websites. You can also go to the electronic version at *apegm.mb.ca* and access direct links to any of these companies.

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To reach professionals through *The Keystone Professional* magazine and its targeted readership, contact Darrell at your earliest convenience to discuss your company's promotional plans for 2012.

Darrell Harris, Marketing Manager

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- Provide guidance with respect to establishing comprehensive safety programs tailored to meet the needs of individual companies both large and small.
- Act as an Authority Having Jurisdiction to grant COR™ Certification and Small Employer COR™ Certification.

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